

MIPP TPC

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- **April–May**
 - Leaky connectors repaired
 - One gating grid connector still suspect, should be OK with cable
 - Cathode ramped to 10 kV in nitrogen
- **Since Last Meeting**
 - 3 Broken O-rings replaced
 - Checked for DC PS operation in JGG fringe field – OK
 - TPC mounted on cart on stand
 - Clean room dismantled
 - TPC aligned to central field axis, ± 0.25 mm at ends
 - Cart stop/lock installed, repeatable to < 0.25 mm
 - Gas rack cleaned, seals replaced, connections in progress
 - Prototype Gating Grid Driver
 - DC cables installed
 - CLK/TRG distribution installed
 - Cable trays installed
 - Water system installation in progress (mostly hoses)

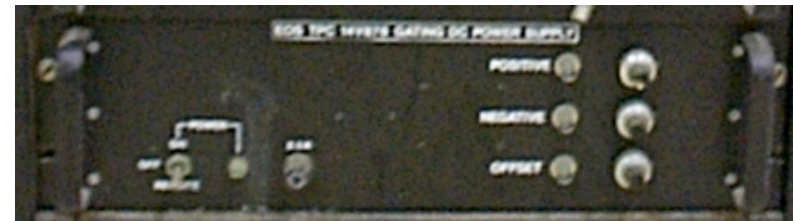
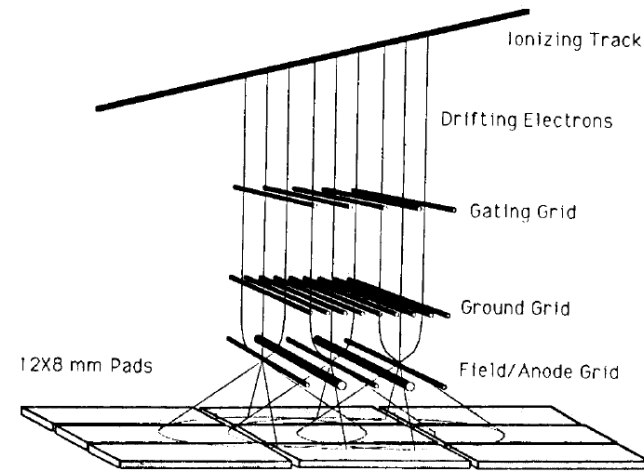
Landing the TPC on its Cart



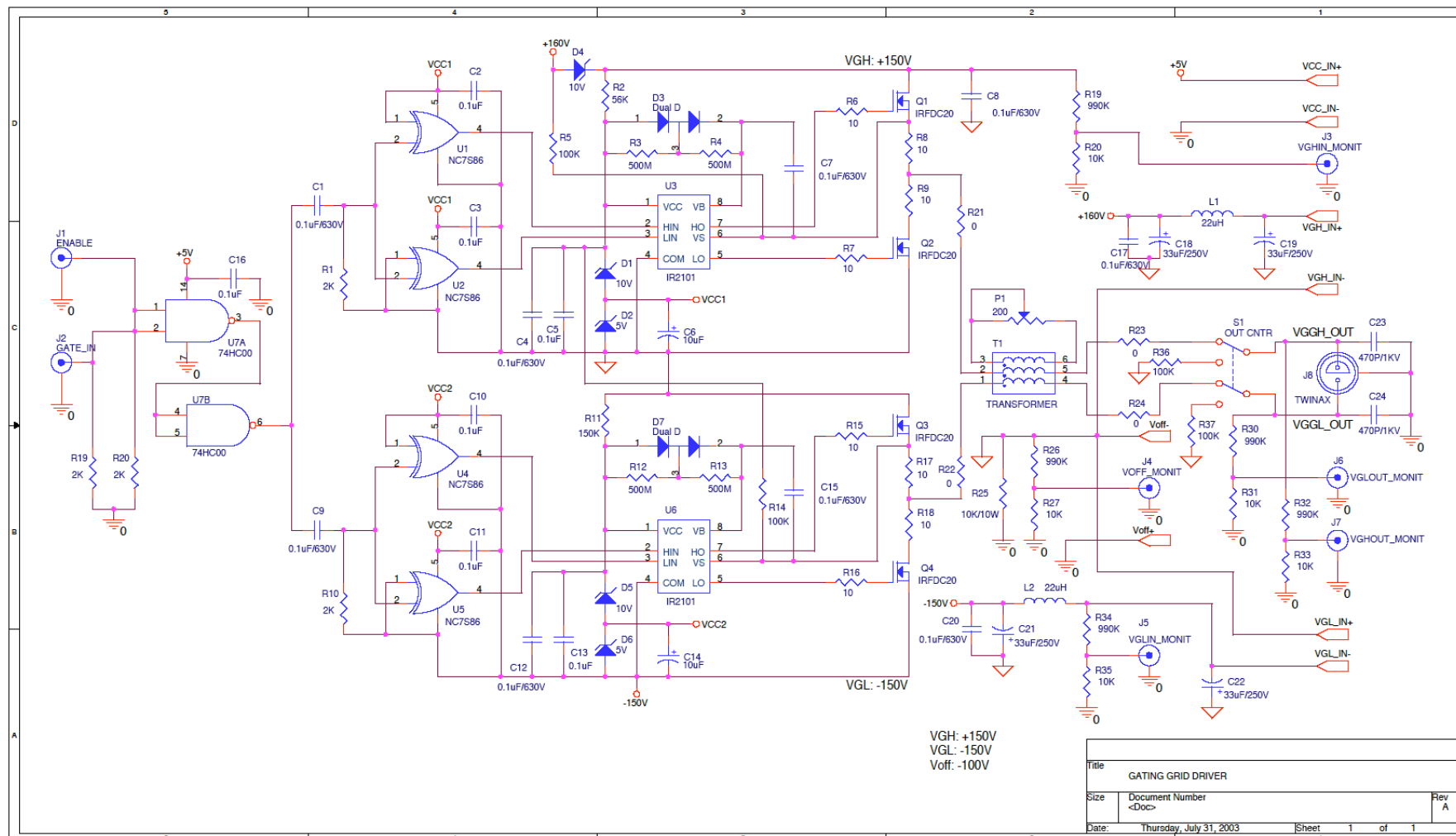
TPC Gating Grid And Driver



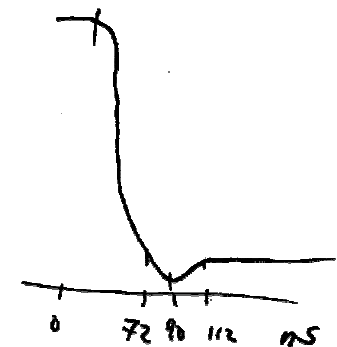
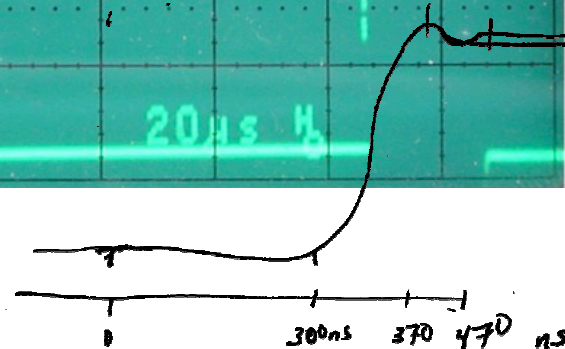
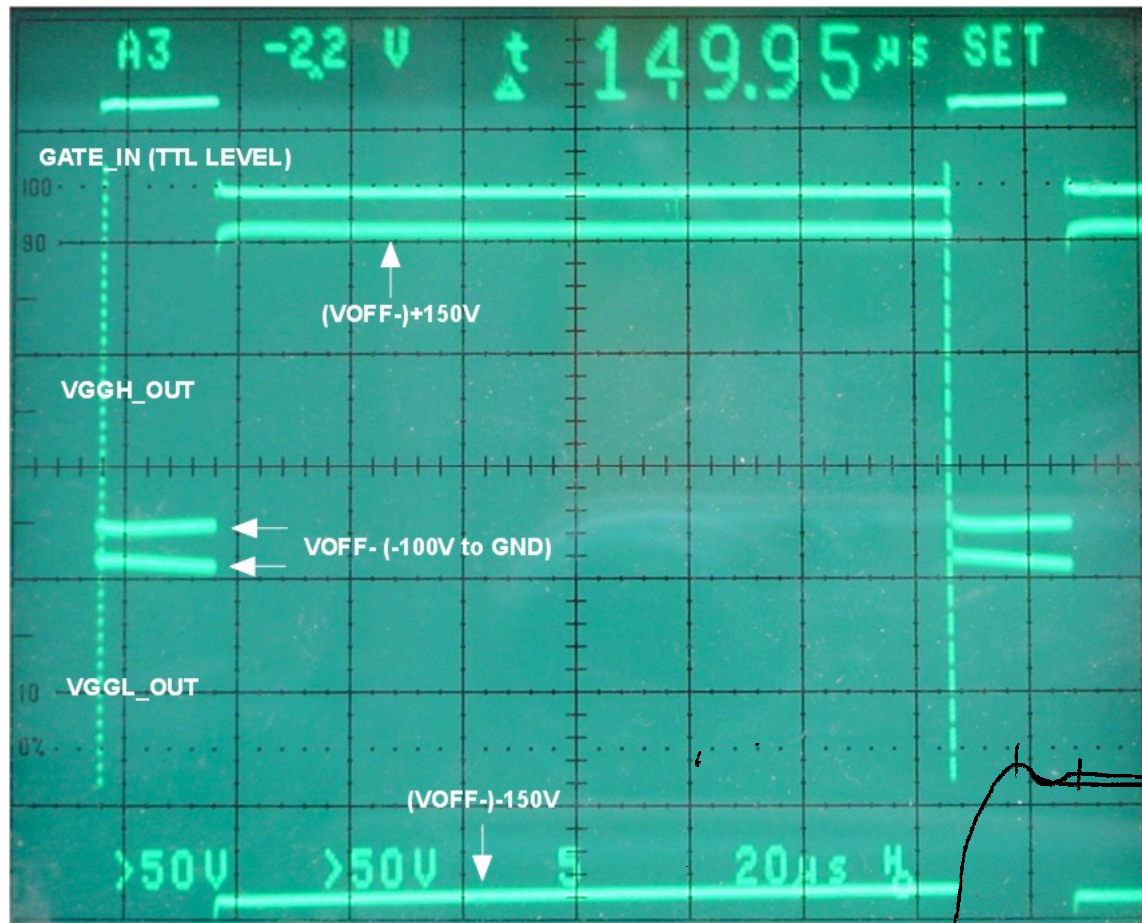
- **Concept**
 - Blocks drifting electrons until triggered, preventing avalanche and space charge buildup
 - 3 parts: Grid, PS, Driver
- **Gating Grid**
 - Upstream and downstream sections
 - Measured 6.4 nF/section
 - With 100 Ω driver impedance, consistent with BNL E895 rise time
- **Power Supplies**
 - Set
 - VGG-H, VGG-L (blocking)
 - VGG-Offset (transparent)
- **Driver**
 - Trigger – switches output between blocking and transparent



New Driver Circuit



New Driver Prototype Waveforms



GG Driver Logistics



- **Final boards will be inside GG PS chasses (2 + spare)**
- **Inputs**
 - GATE, TRIG (TTL)
 - TRIG width sets output width
 - VGGH, VGGL, VGGOFF (locking 10 turn pots)
 - Switch to select triggered or always transparent
 - (Common mode load pot front panel adjustable)
- **Outputs**
 - Single cable to TPC GG section (Twinax)
 - Internal header to add output impedance (longer rise time)
 - 100:1 high impedance monitor outputs for
 - Set point voltages: VGGH, VGGL, VGGOFF
 - Pulsed outputs: VGGH-out, VGGL-out
- **Characteristics**
 - Propagation delay ~ 370 ns
 - Rise/fall time ~ 70 ns

GG Driver Fabrication



- (Not needed for initial beam)
- Proceeding with board layout
- Attempting to get boards (4?) made in FY03
 - How to pay?
- Proceeding with PS mods (add connectors, *etc.*)
- Plan to have GG fully operational by end of shutdown

Remaining TPC Work



- **Next week (PDB)**
 - String fiber to VME crates
 - Reinstall missing stick
 - Progress on rack protection
- **By 1 October**
 - Finish water and gas
 - Safety document
- **Before end of shutdown**
 - Complete testing of repaired sticks (3 more repaired by Bob Jones)
 - Complete rack protection
 - Complete GG Driver
 - Complete TPC DAQ